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## The Ancient Near Eastern Glyptic Collections of the Royal Museums of Art and History Reconsidered

*Vanessa BOSCHLOOS, Anne DEVILLERS, Eric GUBEL, Hendrik HAMMEUW, Cynthia JEAN, Laurence VAN GOETHEM, Sam VAN OVERMEIRE & Bruno OVERLAET*

**SUMMARY** – The Royal Museums of Art and History of Brussels (RMAH) boast a rich and world-renowned collection of glyptic material from the Ancient Near East. The collection consists of stamp and cylinder seals, seal impressions and sealings, originating from a broad range of cultures and dating from the beginning of their production down to the Roman period. They illustrate the entire historical development of a type of object that provides unique insights into the economic, cultural, environmental and political history of a vast region. Over the years, many of these seals, seal impressions and sealings have been studied and published, but a comprehensive revision of the entire corpus imposed itself since long date. This contribution presents the first results of this scientific and museological exercise.

**RÉSUMÉ** – Les Musées royaux d’Art et d’Histoire de Bruxelles (MRAH) conservent une collection de matériel glyptique du Proche-Orient ancien de renommée mondiale. La collection se constitue de cachets, de sceaux-cylindres, d’impressions et de scellements provenant d’une large palette de cultures et d’époques, recouvrant une période qui s’étend des origines de cet art jusqu’à l’époque romaine. Ils illustrent le développement historique de ce type d’objets dans son entièreté, offrant des aperçus uniques de l’histoire économique, culturelle, environnementale et politique d’une vaste région. Au fil des années, beaucoup de ces sceaux, impressions et scellements ont été étudiés et publiés, mais une révision raisonnée de l’entièreté du corpus s’impose depuis longtemps. Cette contribution présente les premiers résultats de cette entreprise scientifique et muséologique.

**SAMENVATTING** – De Koninklijke Musea voor Kunst en Geschiedenis (KMKG) bewaren een rijke en wereldvermaarde collectie van zegelmateriaal uit het Oude Nabije Oosten. De verzameling omvat stempel- en rolzegels, zegelafdrukken en verzegelingen, toebehorend aan zeer uiteenlopende culturen en daterend van het begin van hun productie tot aan de Romeinse periode. Ze illustreren de hele historische ontwikkeling van een type object dat unieke inzichten biedt in de economische, culturele, milieu- en politieke geschiedenis van deze uitgestrekte regio. In de loop der jaren zijn veel van deze zegels en zegelafdrukken bestudeerd en gepubliceerd, maar een allesomvattende herziening van het gehele corpus drong zich sinds vele jaren op. Deze bijdrage stelt de eerste resultaten voor van deze wetenschappelijke en museologische oefening.

## INTRODUCTION

An important and large collection<sup>1</sup> of stamp and cylinder seals, sealings and seal impressions is conserved in the RMAH's section Ancient Near East and Iran (respectively O. and IR. inventory numbers). It was constituted over the past two centuries, beginning shortly after the founding of the museum in the mid-19<sup>th</sup> century, and covers a wide range of cultures and periods, geographically spread from the Mediterranean to the vast Iranian plains and from the Anatolian heights to the Arabian Gulf. The oldest objects date back to the 5<sup>th</sup> millennium BC; an arbitrary *terminus* for this collection has been placed in the late Roman – Sasanian periods.

Seals are a unique source of information on the living conditions of the past millennia. No other corpus of images offers a comparable abundance of material, of pictorial diversity and quality, extending over such a long period. This potential of information and the need to make it available to diverse fields of application were understood since the 19<sup>th</sup> century and dictated the uniform presentation of a number of illustrated catalogues, allying representation and description. The Ancient Near East collections of the RMAH were studied and published in the past along these commonly accepted editorial lines. However, since the late 19<sup>th</sup> and early 20<sup>th</sup> centuries, our knowledge of the ancient Near Eastern cultures, the evaluation of their environment and, above all, the understanding of the glyptic, its conventions and its stylistic evolution have greatly improved. Traditionally, glyptic studies are restricted to the field of art history and therefore focus on stylistic and/or iconographic features, but their potential is by far broader. They may tell us how, why, when and by whom seals were used. They reveal the organization of the economic, temple and juridical administrations. Moreover, it is not only possible to identify the function of a seal or its impressions, but even – thanks to the large amount of available material – to monitor changes in seal function through time<sup>2</sup>. Seals impressed on ancient bullae, clay tablets or tags in particular, inform us on the sealing practice itself.

The older descriptions concentrated on matters of style and of geographical and temporal allocation, yet very little on the exploitation of socio-economic or environmental content. Indeed, it is only since the 1950's that the publication of a series of catalogues of large collections, accompanied by critical analyses, profoundly changed our perception of glyptic. Similarly, surveys and excavations have only recently been able to construct a more accurate picture of the distribution and trade routes of the Syro-Mesopotamian settlements and of the environment and biotopes in which they developed.

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<sup>1</sup> COLLON 1987, p. 9 mentions the RMAH seal collection as among the largest known world-wide.

<sup>2</sup> GIBSON & BIGGS 1977, p. 1.

## CONCISE HISTORY OF THE NEAR EASTERN GLYPHTIC COLLECTION

In the 19<sup>th</sup> century, the ancient Near Eastern seal collections of the RMAH began to build up<sup>3</sup>. Among the very first objects acquired were two cylinder seals (Old Babylonian seal O.699 and Mitanni seal O.801), at that time mounted into a necklace together with an Egyptian cylinder seal<sup>4</sup>. Most of these early acquisitions came by bequests and donations, some through purchase from private collectors or antiquities dealers. In 1913 the museums bought “*un grand nombre d'intailles*” from abbot Henri de Genouillac after his ‘excavation and purchase’-voyage across Mesopotamia. They included bullae with multiple stamp impressions from Uruk (see below p. 28). By 1917, this culminated in a first publication: *La collection des intailles et des empreintes de l’Asie antérieure aux Musées royaux du Cinquantenaire à Bruxelles* compiled by Louis Speleers<sup>5</sup>. He added photographs and comments to the 236 objects and beside stamp and cylinder seals also included seal impressions on clay tablets, bullae and tags; these were an exceptional and welcome choice for these early days in glyptic studies. Today, Speleers’ study is to a large extent outdated, the quality of the print and of the photographs was rather poor, but his effort was nonetheless pioneering.

The collection continued to grow during the *Interbellum*, in most cases through purchases. The most elaborate group was bought from M. Louis Cugnin, a private seal collection previously published by Léon Legrain in 1911<sup>6</sup>. These new acquisitions were published in 1943 as a *Supplément* to Speleers’ first catalogue<sup>7</sup>. The inscriptions from impressions on bullae and clay tablets were published in 1925 in the context of the publication of the cuneiform documents in the RMAH collection<sup>8</sup>. In the 1970s, most of the bullae and clay tablets were treated against deterioration by British Museum experts.

During the last decades of the 20<sup>th</sup> century, some publications were entirely dedicated to glyptic, for example to cylinder seals from Syria<sup>9</sup> or to Sasanian stamp seals<sup>10</sup>. Occasionally corrected readings were proposed and published in the museum’s *Bulletin*, international scientific journals and/or exhibition catalogues. The collection now also included seals from the Moussa collection, seals donated by the Iranian government to the Belgian expedition in Luristan (1965-1979), and the Neo-Assyrian bilingual clay tablet collection from Ma’allanate with stamp and cylinder seal impressions<sup>11</sup>.

<sup>3</sup> GUBEL & OVERLAET 2007, p. 26-31 & SPELEERS 1917, p. 72-74.

<sup>4</sup> GUBEL & OVERLAET 2007, p. 27.

<sup>5</sup> SPELEERS 1917, see also SPELEERS 1923.

<sup>6</sup> LEGRAIN 1911 & SPELEERS 1939.

<sup>7</sup> SPELEERS 1943.

<sup>8</sup> SPELEERS 1925.

<sup>9</sup> HOMÈS-FRÉDÉRICQ 1981.

<sup>10</sup> GIGNOUX & GYSELEN 1987.

<sup>11</sup> HOMÈS-FRÉDÉRICQ 1976 & 1986; LIPINSKI 2010.

A first step towards a comprehensive re-evaluation of the glyptic collections of the RMAH was undertaken in 2007, with the publication of a set of ancient Near Eastern seals in the framework of the exhibition ‘*De Gilgamesh à Zénobie – Van Gilgamesj tot Zenobia*’<sup>12</sup>. This demonstrated that the RMAH museum database needed completing and updating and stressed the need for high quality photographic reproductions of the entire glyptic collection. Simultaneously, the need for a re-assessment of the complete collection was underlined by the results of doctoral researches and projects focussing on selected groups, such as the Mesopotamian Early Dynastic cylinder seals<sup>13</sup> and the Egyptian stamp seals<sup>14</sup>. This required formulating well-defined research questions, evaluating new techniques and using innovative approaches. Preliminary studies focus on historical insights given by seals with a known provenance, the re-edition of inscriptions and on data given by the iconographic material (see below p. 28 and following).

## REGISTRATION FOR RESEARCH, SAFEGUARDING AND PUBLICATION

Revising the complete set of glyptic material demands a coherent methodological approach with well-defined technical and research questions. For the current project a new imaging programme formed the starting point. The production of digitized images of all the objects, proved a sound procedure to avoid the risk of repeated handling of the artefacts, all the while ensuring that not a single item would be omitted. By choosing imaging techniques that not only visualise the objects but also provide additional research benefits, the durability of the efforts are henceforth assured. Whereas a researcher generally focuses on the morphological and iconographical characteristics of a seal or its impression, they are at the same time three-dimensional objects. For example, many publications omit images of the reverse side of objects such as in the case of ‘jar sealings’, where impressed traces of ropes, textiles and ceramics provide information on their use<sup>15</sup>. The new images go beyond the mere illustrative purpose and must become a multi-approachable and exploitable medium. Simultaneously to the imaging, meta-data were collected according to a standardized information scheme. These include the existing entries in the RMAH collection database, extended with specific types of information related to seals, impressions and sealing practice.

<sup>12</sup> GUBEL & OVERLAET 2007.

<sup>13</sup> DEVILLERS 2013.

<sup>14</sup> For a re-assessment of scarabs from ancient Jericho, see BOSCHLOOS 2009.

<sup>15</sup> ZETTLER 1987.



In general, the registration followed a fixed operational chain. This allowed detecting and addressing inconsistencies in the collection database, such as misinterpretations, wrongly catalogued images, objects that were omitted or unnoticed in previous publications as well as the identification of items that had been misplaced in the storage rooms. The imaging also detected possible deterioration or damages to the objects, pointing out the need for treatment.

Glyptic art comes in many forms. As such, imaging seals, sealings and seal impressions necessitates differentiated approaches. Stone cylinder seals present different technical challenges compared to bronze stamp seals or impressed and superimposed seal impressions left on clay surfaces. Conventional digital photography<sup>16</sup> and newly developed dynamic imaging techniques were therefore used complementarily throughout the registration process. The artefacts were first photographed to record their shape and the material in which they were manufactured and then impressed in modern clay<sup>17</sup> and recorded with the Portable Light Dome system (PLD)<sup>18</sup> in order to record all details. The same type of dynamic imaging also proved to yield excellent results for the capturing of original seal impressions on a variety of clay surfaces. These PLD images allow reading the impression in an interactive manner: in the virtual representation of the recorded surfaces, the relief can be highlighted from every angle, the colour modified, 3D models generated and a large number of visualization filters applied to enhance various features (see fig. 1). These options have allowed the discovery of new features, barely visible to the naked eye (see p. 28).

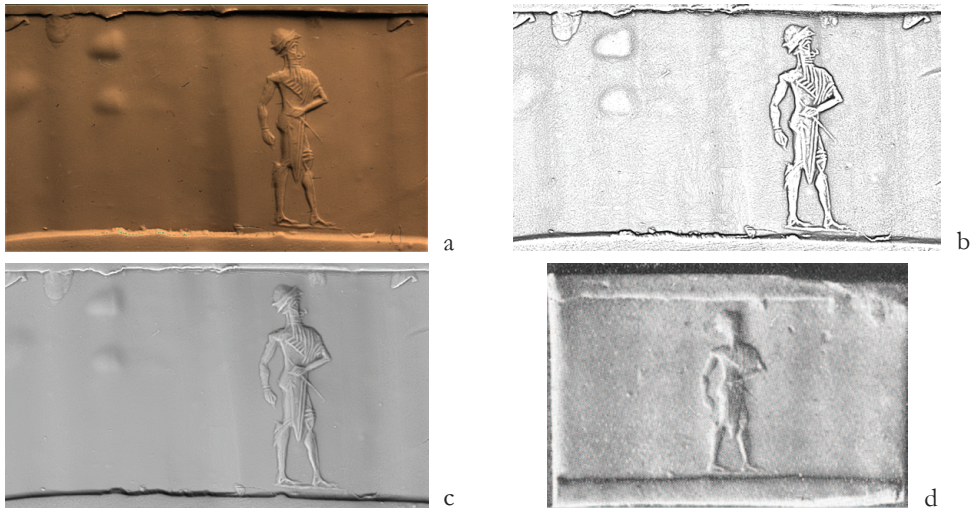
The set of images (conventional and dynamic) and the gathered metadata are systematically being uploaded into the RMAH online catalogue. As such, a well-equipped research tool on glyptic artefacts is created. The PLD images are more than dynamic pictures. They include the registration of the 3D topography of the objects, scaled up to 3 digits after the decimal point, thus measurements can be taken both on the interactive 2D and the 3D models. This implies that the PLD files hold and safeguard a virtual copy including the x-y-z coordinates of every detail. Hence, new types of research questions can be addressed, such as, identifying carving techniques, detecting handled manufacturing tools or variations in shape of particular features in comparison to other scanned surfaces; the latter even opens perspectives towards automated pattern recognition within a selected group of virtual models (see figs. 2 and 3).

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<sup>16</sup> We express our sincere thanks to the photo lab of the RMAH, in particular to Raoul Pessemier, Iona Thys and Ethel Vandenberghe.

<sup>17</sup> For the majority of these self-made modern impressions we used: Sculpey<sup>III</sup>, Oven-Bake Clay, 301 Tan / Havane / Tostado.

<sup>18</sup> The PLD system was developed at the University of Leuven and applied at the RMAH since July 2012, see WILLEMS *et al.* 2005 and HAMEEUW & WILLEMS 2011.



*Fig. 1. – Four different visualisations of a modern impression of cylinder seal O.597:  
a) 2D PLD image in colour mode (sharpened); b) 2D PLD image in sketch mode (automated black/white line drawing); c) 3D PLD image in Radiance Scaling mode via MeshLab software package; d): Flatbed scan from original publication in Speleers 1917, p. 157: 597  
(© KMKG-MRAH).*

Capturing high definition conventional pictures and PLD images of all the glyptic objects provides excellent material for a (re)publishing programme (on-line and/or in print). To maximise the durability of these efforts, all results of the PLD scans have been transformed into one artefact PDF file per seal. Each PDF document contains differently visualised images of one object. If useful, images of details of the recorded surface are added and for each surface of interest a 3D model (u3d) is incorporated in the same PDF file. These digital files reduce the need for researchers to handle the actual objects, which are, in the case of sealings and bullae, often extremely fragile. Based on this work, a set of publications is scheduled on several seal groups.

## SELECTED RESEARCH TOPICS AND SOME PRELIMINARY RESULTS

Parallel to the re-examination and recording of the collection discussed above, several new research topics are explored. In the following paragraphs, some examples of these research topics and of the preliminary results of the re-evaluation of specific seals and sealings are discussed.



Fig. 2. – Sealing surface of the globular stamp seal IR.35: scanned with the PLD and presented in the measure mode (in colour-sharpen); Green line: horizontal measurement in mm; Blue line: section profile (exaggerated) according to the path of the green line, the number in mm gives the maximum height difference between the limits of the green line (© KMKG-MRAH).



Fig. 3. – Detail of the sealing surface of stamp seal IR.35 as scanned with the PLD and presented in the measure mode (in colour-sharpen); example of a study on the depth and shape of different types of incisions (© KMKG-MRAH).

## 1. Stamp seals on bullae from Uruk

The revision of a set of bullae with multiple seal impressions published by Speleers in 1917 proved to be an excellent example of how the new methodological approaches can be most rewarding. These six Seleucid (ca. 323-63 BC) bullae from the city of Uruk in southern Iraq were discovered in the Bit Rēš sanctuary and bought from H. de Genouillac shortly after his return from Mesopotamia in 1912. Later that year, a German excavation team started its activities at approximately the same location, revealing many more similar bullae and cuneiform documents. As such, the Brussels bullae can be easily linked to this excavated material<sup>19</sup>. Upon their arrival in the museum, Speleers had plaster casts made of the sealings. These proved better adapted to black and white photography than the originals' obscured surfaces and he preferred to use these to illustrate his 1917 catalogue. Unfortunately, he only published a selection<sup>20</sup>.

Some additional images and descriptions have since been published<sup>21</sup>, but a comprehensive publication was never made. The most impressive impressions on the bullae are the large 'Greek' impressions, which received most of the attention in previous publications, their *editio princeps* being Naster 1979. Consequently, a fresh look at this material was necessary<sup>22</sup>.

The PLD scanning program made it possible to identify each individual seal impression on the bullae. The six bullae contain a remarkable number of 70 impressions. These offer insights into the relations between the new Greek administrators and the local old urban notability of Hellenistic Uruk<sup>23</sup>. The study corroborates conclusions in recent scientific literature, which suggest a hiatus between the culture of Uruk and the Seleucid capital, Seleucia-ad-Tigris<sup>24</sup>. Whereas Greek motifs are well represented in the corpus of stamp impressions found in the latter city, older 'Mesopotamian' themes survived in the former. This was most likely due to the presence of an old urban gentry that remained in power at Uruk under the Hellenistic empires and succeeded in retaining its own culture for a considerable period of time<sup>25</sup>.

Since Speleers' publication, some of his interpretations had already been corrected<sup>26</sup>, but the use of interactive PLD images henceforth enables a full revision, in particular as

<sup>19</sup> LINDSTRÖM 2003 & WALLENFELS 1994.

<sup>20</sup> SPELEERS 1917, p. 87, 234-239, fig. 204-209.

<sup>21</sup> CAPART 1935, p. 82, fig. 74; BALTY 1988, p. 72 & NASTER 1979, p. 215-219.

<sup>22</sup> HAMEEUW & VAN OVERMEIRE (in press).

<sup>23</sup> CLANCIER 2011.

<sup>24</sup> MESSINA & MOLLO 2004.

<sup>25</sup> CLANCIER 2011, p. 756-758.

<sup>26</sup> ROSTOVITZEFF 1932; NASTER 1979 & LINDSTRÖM 2003.



to the identification of iconographical elements such as the Medusa-head, Tyche, “woman with branch”, griffins and centaurs, and a variety of animals such as crabs, lions, bulls and other quadrupeds. Several associated objects (stars, crescents, triangles), barely visible to the naked eye, could now be discerned as well.



Fig. 4. – Seal impression A on bulla O.205

a) Digital photograph, capture with NIKON D2X, 4288x2848, f/32 (© KMKG-MRAH).

b) PLD scan, screenshot of 3D model with radiance scaling filter of MeshLab (© KMKG-MRAH).

c) Digital photograph of the concealed inscription, enhanced with Photoshop filters (© KMKG-MRAH).

An interesting feature not observed before, was noticed on stamp impression “A” of bulla O.205 (letters are used to identify the different impressions on each of the bullae). Traces of five, maybe six previously unnoticed faded letters were observed (fig. 4)<sup>27</sup>. Compared to the other two, clearly legible lines on the stamp (XEOΦΥΛΑΚΚΟΣ OPXΩΝ, “guardian of the people of Orchoe”), these characters are of a much smaller size. They seem to have been erased, most probably on the original stamp seal, not on the stamped surface. These traces are barely visible on the original surface and only came to light by applying different visualization filters in the dynamic images. When examining the letters carefully, we might identify [.PX ..], possibly part of OPXΩΝ or ‘the people of Orchoe’ (Uruk). As this almost erased inscription seems small in size, the detail in question possibly explains its removal and replacement by a similar inscription in a larger font size.

<sup>27</sup> A conventional digital photograph and a PLD image was taken of one and the same surface to test the performance of both imaging techniques. It was while using the PLD model that the additional inscription was discovered. Therefore, fig. 4. gives a newly captured standard museum photograph (4a) in combination with one of the imaging results of a standard PLD recording (4b). The PLD version reveals the hard to identify text line. However, when the appropriate light angle applied, conventional photography was as successful in visualizing the obscured line, see detail of 4c.

The comparison of the new images with those made upon arrival at the museum, showed that several impressions suffered severe deterioration as the unbaked clay bullae entered the museum only months after excavation without undergoing appropriate preservation measures. The deterioration happened very quickly, as testified by a small note written in 1917 on the museum record sheet of O.206: “*tombé en poussière*, 23.3.17”. Thanks to an intensive conservation programme in 1970-71, they were sent to the British Museum to be baked, making them structurally more robust and resistant against humidity. The choice made by Speleers to publish all the bullae seal impressions through their gypsum copies, still kept at the museum and made shortly after their arrival, allowed him to publish even those impressions which had degraded by then. Figure 5 gives an overview of the different scans and images that could be recuperated from the largest impression on O.206 and its gypsum cast, featuring the motif of the “goddess on throne”.

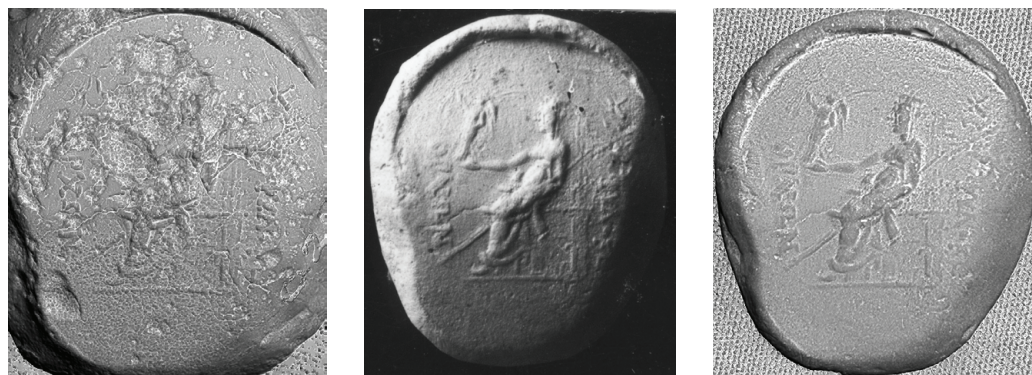


Fig. 5. – Seal impression A on bulla O.206

a) PLD scan situation 2013.  
Screenshot of 3D model with  
radiance scaling filter of MeshLab  
applied  
(© KMKG-MRAH).

b) Flatbed scan of original picture  
of gypsum copy as published by  
Speleers 1917, situation after  
acquisition by RMAH  
(© KMKG-MRAH).

c) PLD scan of gypsum copy  
condition in 2013. Screenshot of  
3D model with radiance scaling  
filter of MeshLab applied  
(© KMKG-MRAH).

## 2. Iconography as environmental indicator, a new research topic

Another research area explored, is the use of glyptic iconography to broaden our insights into Mesopotamian palaeofaunas. As mentioned above, no other medium offers such an abundant and diverse source of images as glyptics. These images are dominated by animal representations, and although their significance yet remains enigmatic for the better part, the precision and attention to naturalistic, even anatomical, detail makes it tempting to

exploit these data. With this in mind, a project focuses on analysing the regional variations in animal species represented in stamp and cylinder seal iconography. It evaluates what insight these variations can provide on the distribution of the fauna in the Mesopotamian sphere and the relation of the people to the wild and domestic animals. Two approaches have been considered. In a first one, the complete faunal assemblages of selected areas and periods, beginning with Upper Mesopotamia in the 3<sup>rd</sup> millennium BC, have been investigated. The frequencies of occurrence of their constituents have been analysed in relation to archaeozoological findings and socio-economic, cultural and environmental conditions. Under a second angle of incidence however, representations of individual species have been traced throughout the regional corpus, as a contribution to the understanding of historical distributions.



*Fig. 6. – Modern impressions of cylinder seals O.420 (top) and O.456 (bottom).  
Left: Conventional digital photographs of old imprints of cylinder seal; Right: enhanced PLD images of new  
imprint revealing all pictorial details  
(© KMKG-MRAH).*

To successfully fulfil this type of research, a correct identification of species is essential. In many cases, their identification relies on small details rendered by the seal artist. The PLD imaging technology coupled with new impressions of the entire seal collection enabled a thorough reassessment of the faunal corpus, providing the starting point for subsequent studies in this domain. Two examples are given in figure 6. Details on the strongly eroded animal combat scene on O.420, such as hair on the animals' bodies, paws,

horns,... previously nearly undistinguishable, are now clearly visible. The inner markings of the felids of O.456, now appear clearly, identifying them as cheetahs, and not lionesses as formerly thought<sup>28</sup>.

In a first phase, catalogues of faunal iconography have been compiled for the Uruk and Early Dynastic periods of five regions of Upper Mesopotamia, the Upper Euphrates, the Balikh, the Khabur, the Middle Euphrates and the Upper Tigris, using only cylinder and stamp seals and sealings found *in situ*<sup>29</sup>. Over 500 images with representations of animals, wild or domestic, have been identified and analysed. The largest sample is from the Khabur basin, with 270 images from 11 sites. Tell Brak alone provided 200 images, enough for a fairly accurate assessment. These results can then be compared to archaeozoological and palaeo-environmental (for habitat suitability) data. The working hypothesis was that in most cases, perhaps with the exception of lions pictured almost everywhere, the species corresponded to the local fauna assemblage. The preliminary results seem to indicate that this is largely the case.

Such studies answer a growing demand in the field of environmental research and nature conservation. The knowledge of historic distribution ranges is an important prerequisite for the species and ecosystem conservation or restoration projects made necessary by the large-scale extinction of species that has marked the last 150 years<sup>30</sup>.

An example of this is a study on the Arabian oryx (*Oryx leucoryx*), prompted by the discovery of a seal in the RMAH collection, depicting an oryx (fig. 7). This animal used to occur throughout the Arabian peninsula and its northern approaches. Large herds persisted well into the 20<sup>th</sup> century, but declined rapidly after that, with extinction in the wild taking place in 1972<sup>31</sup>. Subsequently, large scale programs were set up in Saudi Arabia, the United Arab Emirates, Oman, Israel, Jordan and Syria in order to attempt to reinstall the oryx. Some of the re-established populations eventually failed, but others have developed successfully. These efforts made the oryx an icon of the conservation movement<sup>32</sup>. However, for lack of archaeozoological or historical records, an uncertainty existed regarding the northern and eastern limits of the Arabian oryx's distribution. In total 30 images of the oryx were discovered on material from the Persian Gulf hinterland in Iran, Iraq and Syria, all shedding new light on the historic range of this species<sup>33</sup>.

<sup>28</sup> SPELEERS 1917, p. 113.

<sup>29</sup> This inventory began in the RMAH collection but soon extended to other sources.

<sup>30</sup> BARNOSKY *et al.* 2011; DONLAN *et al.* 2006; PIMM *et al.* 1995.

<sup>31</sup> IUCN SSC Antelope Specialist Group 2011. *Oryx leucoryx*. In: IUCN 2013. IUCN Red List of Threatened Species. Version 2013.1.

<sup>32</sup> STANLEY PRICE 1989.

<sup>33</sup> DEVILLERS 2013.



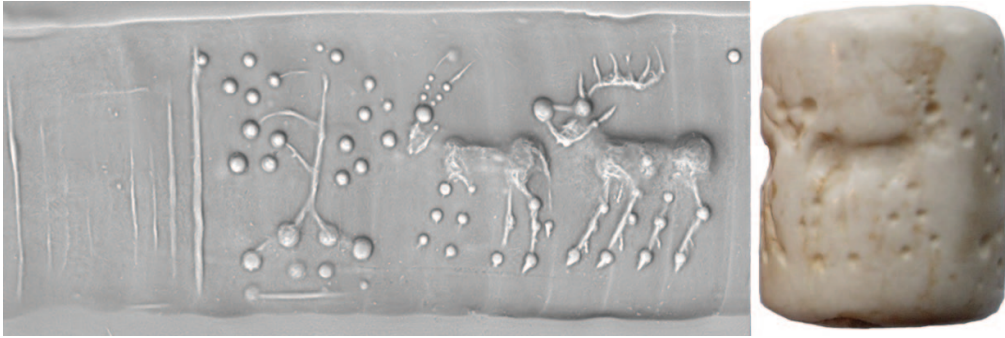


Fig. 7. – Seal O.1406 depicting an Oryx recognisable by its distinctive straight horns with regular ridges and a long tufted tail. PLD image of modern impression and photograph of physical cylinder seal (© KMKG-MRAH).

### 3. An Achaemenid seal redated

Many seals and sealings have been redated as a result of iconographic details which appeared while using the interactive PLD imaging.

One such seal is IR.21, a veined marble stamp seal acquired around 1913 and published in Speleers' catalogue as "Sasanian"<sup>34</sup>. The side of the stamp seal shows a goat-fish whereas the very worn circular surface depicts a bowman on horseback and a dog targeting an ibex. The hunting scene, the wavy depiction of the trousers, the reflex bow, the curved backwards turning mountain goat, all these elements seemed to agree with hunting scenes as they appear on Sasanian royal silver plates<sup>35</sup>. Since 1917, we have, however, a much better understanding of Near Eastern seals and the seal's shape and the choice of material does not fit the Sasanian stamp seal repertoire. It fitted much better the Neo-Assyrian, Neo-Babylonian and the Achaemenid repertoire<sup>36</sup>. The PLD images (fig. 8) subsequently revealed hitherto unregistered details that allow an undisputable dating in the Achaemenid period (ca. 550-330 BC). It also excludes the possibility of a Sasanian re-cutting or addition to an older seal stone, a practice similar seals occasionally betray<sup>37</sup>.

<sup>34</sup> SPELEERS 1917, p. 223, pl. 467.

<sup>35</sup> Compare HARPER & MEYERS 1981, p. 40-98.

<sup>36</sup> KEEL-LEU 1991, nos. 95, 117-124, 131, 143-145, 148-150, 152, 157-158, 167; BUCHANAN & MOOREY 1988, nos. 358, 361, 368, 377, 378, 379 & İŞİN 2007, p. 77, fig. 3.

<sup>37</sup> RITTER 2010, pl. IX, nr F1001.

A goat-fish, a sacred hybrid animal of the god Ea, is depicted on the side of the seal. This creature has a long history in the Near East but became very popular as main motif on Babylonian 6<sup>th</sup> and 5<sup>th</sup> centuries BC seals<sup>38</sup>. It continued to be used well into the Achaemenid and Seleucid periods where it may have acquired a different, astrological significance<sup>39</sup>. Goat-fish are exceptional on Sasanian seals and they are stylistically very different, the curled fishtail being much closer to Roman hippocampus representations<sup>40</sup>.



Fig 8. – Various presentations of IR.21  
(© KMKG-MRAH).

Hunting themes showing a hunter on foot with a dog, spearing or shooting an animal, usually a boar, goat or antelope, are familiar from Neo-Assyrian and Neo-Elamite cylinder seals. The hunting theme continued to remain popular in the Achaemenid and Seleuco-Parthian era and developed into a canonical pattern in the Sasanian dynasty. The

<sup>38</sup> GREEN 1986; ORNAN 2005, p. 125-126, fig. 16, 57, 121, 155.

<sup>39</sup> ROSTOVZEFF 1932, p. 21.

<sup>40</sup> RITTER 2010, p. 131-132, Taf. XIV, nr A6007, XXV.

hunting dog is rarely present but the hunted animal is then depicted twice in the same scene, once while being shot or fleeing and a second time slain beneath the hunter's horse. This is clearly not the case on IR.21. The most important of these are a series of horizontal lines behind the hunter's leg running across a light vertical line, indicating the rim of a saddle blanket. The use of a saddle blanket with a crenelated edge is typical Achaemenid<sup>41</sup>. On small images, such as those decorating coins or seals<sup>42</sup>, these crenulations are reduced to a series of horizontal lines. Other details of the iconography, the clothing, the ibex with its turned posture (reminiscent of the handles of Achaemenid vessels), the unique musculature (circular patches on hip and shoulder, the emphasized rib cage), are all familiar features from Achaemenid art.

#### 4. Research topic: the inscriptions on stamp and cylinder seals

Within the re-assessment of seals and sealings, the epigraphic parameters play a crucial part. Two types of inscriptions are to be considered in this context. The inscriptions engraved on the seals, i.e. the physical objects, and the inscriptions impressed by stamps and cylinder seals on clay tablets, bullae and tags. Some of the latter had already been read and published by Speleers in the 1910-40's<sup>43</sup>, but since then, the knowledge on the logographic and syllabic values and palaeographic characteristics of cuneiform signs, especially in the context of texts engraved on seals, as well as the knowledge of Mesopotamian onomastics (Akkadian, Sumerian, West-Semitic, Kassite and others) have seen considerable progress. The seal inscriptions on 77 clay tablets and bullae with one or more seal impressions (including examples with Hittite hieroglyphs and Greek characters) and 119 inscribed cylinder or stamp seals (mainly in cuneiform script but also in Aramaic, Egyptian, Hittite, Hebrew and Pehlevi) have been re-examined.

For the decipherment of the inscriptions all available data were used: the actual objects, the early publications, unpublished pictures and drawings, and the newly obtained interactive images made with the PLD recording system. Quite in contrast with the old data, the interactive 2D and 3D models proved once again able to reveal hard to read inscriptions which had only been faintly impressed in the fresh clay, or in the case of seals, wherever the surface of the stone was badly worn.

<sup>41</sup> GOLDMAN 1984 & KNAUER 1986.

<sup>42</sup> BABELON 1910, pl. XCI, nr. 7-21.

<sup>43</sup> SPELEERS 1925 for seals impressed on clay tablets and bullae; SPELEERS 1917 and 1943 for stamp and cylinder seals.

In many cases, more accurate dates for the objects could be established, particularly for a group of seals with an iconography related to the Ur III (ca. 2112-2004 BC) or Isin-Larsa (ca. 2004-1763 BC) periods. These two successive periods display quite similar glyptic styles in the realm of presentation scenes. By identifying the functions held by some of the seal owners, the seal itself could be assigned to one of either period, as some of these professions are typical for the Ur III period, but have fallen into disuse in the socio-political system of Isin-Larsa. Speleers dated the seals displaying this type of presentation scenes as “*scènes de présentation d’Ur-Isin*”, merging the two periods in one group<sup>44</sup>. Now the inscriptions can, in some instances, confirm the revised analysis of the iconography (for example seal O.407 can be attributed to the Ur III period thanks to the profession of the seal’s owner)<sup>45</sup> or identify re-cut seals (for example the Ur III seal O.418 is re-cut with an Old Babylonian inscription). Moreover, a few seal impressions on some RMAH tablets were also attested in other collections, and were identified by comparing sequences of Ur III seals attested on other tablets in the online database of the Cuneiform Digital Library Initiative<sup>46</sup>.



Fig. 9. – Cuneiform tablet O.3674 bearing the official cylinder seal impression of *Ini-Tesub*, Hittite viceroy at the city of Karkemish (© KMKG-MRAH).



Fig. 10. – Cuneiform tablet O.4974 (copy) bearing the official royal stamp seal of *Šaušgamuwa*, king of the region of *Amurru* (© KMKG-MRAH).

<sup>44</sup> SPELEERS 1917, p. 133-156.

<sup>45</sup> SPELEERS 1917, p. 137. The profession of “officer in charge of 60 men” is attested only in the Ur III period, STEINKELLER 1979.

<sup>46</sup> Cuneiform Digital Library Initiative: <http://cdli.ucla.edu/>.



Several inscribed seals in the Brussels collection appeared to be of particular interest, either because of their original owner, or because they visualize the cosmopolite nature of an era.

Regarding the first, the inscriptions in seal impressions on two cuneiform tablets assign them to two prominent actors known from a corpus of texts established by modern scholars, which reveal insights on the divorce of a king of ancient Ugarit, Ammistamru (13<sup>th</sup> century BC). Tablet O.3674 (fig. 9)<sup>47</sup> bears the official seal of Ini-Tešub, Hittite viceroy of the city of Karkemish. The inscription was composed in Akkadian cuneiform, not in Hittite hieroglyphic as Ini-Tešub's other official seals.

The second seal mentioning a key-figure appears on a fragmentary cuneiform tablet (the RMAH keeps a copy: O.4974, fig. 10), which carries the lower part of the impression of one of the royal seals (in Hittite hieroglyphs) of Šaušgamuwa, king of the region of Amurru. As such, the seal impressions on both cuneiform tablets – one of a Hittite viceroy, the other of a king – belonged to the most influential people of the Late Bronze Age political world of the Syro-Anatolian realm. Ini-Tešub and Šaušgamuwa were both involved in the divorce of Ammistamru, king of Ugarit. Ammistamru's wife was the sister of Šaušgamuwa king of Amurru, and the daughter of a Hittite princess who had been married to Šaušgamuwa's father, the previous king of Amurru. Ammistamru repudiated his wife and sent her back home but as an afterthought asked her to come back, probably to execute her. Her brother Šaušgamuwa refused to send her back, but the Hittite king Tudhaliya IV and the Hittite viceroy of Karkemish Ini-Tešub, to whom Ammistamru was a vassal, forced Šaušgamuwa to do so. These two tablets and their royal seals show how strong the royal families of Syro-Anatolia were linked by family bonds, something which is also evident from tablets in other collections<sup>48</sup>.

The last seal, O.2784 (fig. 11), illustrates the complexity of some of the seals in the collection. It dates from the Achaemenid period (late 6<sup>th</sup> - early 5<sup>th</sup> century BC) and is the testimony of an interesting syncretism. The cylinder seal belonged to an Egyptian sailor Petečsis<sup>49</sup>, who was probably working for the Persian Empire. While his seal is oriental in concept and purpose, depicting the symbol of the Persian god Ahura-Mazda, his name is Egyptian and the inscription is written in provincial late Egyptian hieroglyphs<sup>50</sup>. This cylinder seal illustrates the intercultural nature of the Persian era, with as a bonus, a possible Phoenician connection.

<sup>47</sup> GUBEL & OVERLAET 2007, p. 217, fig. 464.

<sup>48</sup> ARNAUD & SALVINI 1991-1992.

<sup>49</sup> GUBEL & OVERLAET 2007, p. 249, fig. 517.

<sup>50</sup> The Egyptian reading is Padiaset ("who is given by Isis"), attested from the 22<sup>nd</sup> dynasty to the Ptolemaic and Roman periods: RANKE 1935, p. 121, nr. 18.



*Fig. 11. – Modern impression of cylinder seal O.2784, a PLD enhanced image (exaggerated shading) (© KMKG-MRAH).*

## FINAL REMARKS

This survey of the on-going re-assessment of the Museums' seals and sealings collection illustrates the advantage of a combined approach in which specialists in archaeology, history, philology, iconography and palaeofaunas work together to situate the objects in their appropriate cultural context. The added value of the PLD-3D technology in this innovative approach is undeniable. Not only does it reveal previously unnoticed details, but it also generates a range of images that render obsolete traditional interpretative drawings. At the same time, it opens new possibilities in conservation and research. Scholars no longer need to handle the actual objects, they can be studied online in superb quality, something which is particularly important in the case of fragile items such as clay bullae and tablets.

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